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NEW HAMPSHIRE COLLEGE
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A PLAN

for Improving the Quality of Milk and Cream Furnished to New Hampshire Creameries.

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A PLAN FOR IMPROVING THE QUALITY OF MILK AND CREAM FURNISHED CREAMERIES.

During the past few years but little improvement has been made in the quality of creamery butter; this too, in spite of the fact that creamery butter makers, as a class, have never before been so well informed regarding their work. Never before have they been able to make use of as good machinery and special apparatus, and never before has a fine quality of butter been more eagerly sought after by the consuming public.

In many instances, the quality of creamery butter has become poorer in spite of the above-mentioned improved conditions.

The reason is seemingly found in the gradual change which has taken place in the methods employed by dairy farmers in delivering their product to the creameries. This change has resulted in the acceptance and use by creamery men of a poorer grade of milk, and more particularly, a poorer grade of cream for butter making. For several years creameries, as a rule, received whole milk only from their patrons, separating and retaining the cream at the creamery. With the invention, development and distribution of small cream separators operated by hand or other light-power, there occurred a gradual change or drifting away from the so-called whole milk system.

Under present conditions, a very large percentage of cream used for butter making is separated from the milk on farms. Many farmers are not as yet familiar with the principles of dairy bacteriology, and some do not

fully understand how properly to care for a cream separator. It sometimes happens that separators are used several times without being properly cleaned, and in some instances they are placed and used in some convenient but dark and dirty corner of the barn. Cream separated under the above mentioned conditions is brought into contact with many undesirable bacteria, and bad flavors are the natural result. It frequently happens that cream is not cooled to a low temperature and properly cared for after it is separated on the farm, and often it is of uncertain age when delivered at the creamery.

In some localities competition exists between creameries or between city milk contractors and a creamery, and in order to prevent patrons of a creamery leaving it for another, or for a city market, creameries sometimes make a practice of allowing or compelling their managers to accept old cream and milk of an inferior quality. It is evident, therefore, that no material improvement can be made in the quality of creamery butter until some improvement is caused to be made in the care of milk and cream on the farm, and the condition of milk and cream when delivered to the creamery.

It is evidently not wholly the lack of knowledge on the part of the dairy farmer that is responsible for the condition of his product. It is more often due to habitual carelessness, and a failure to fully realize his responsibility in the matter of cleanliness, low temperature and prompt delivery of a perishable food product.

It seems necessary to overcome this condition before any great progress can be made in securing a better product from the farm.

With this object in view,

A PLAN FOR GRADING OR SCORING MILK AND CREAM

at the time of receiving at the creamery, and grading the price paid patrons has been worked out and put in suc-

cessful operation at the New Hampshire College creamery. The system was inaugurated July 1, 1906, and the record of the first scoring is here given:

Patron No.	Flavor, 50 points.	Acidity, 25 points.	Condition, 25 points.	Score.	Remarks.
1	40	23	25	88	
2	35	20	24	79	Foreign matter.
3	42	25	24	91	Foreign matter.
4	40	24	25	85	
5	40	25	23	88	Foreign matter.
6	35	20	25	80	
7	43	25	24	92	Foreign matter.
8	43	25	24	92	Foreign matter.
9	43	25	24	92	Foreign matter.
10	42	25	24	91	Foreign matter.
11	43	24	24	91	Foreign matter.
12	38	25	23	86	Lumpy cream; rusty cans; foreign matter.
13	40	25	24	89	Foreign matter.
14	35	22	22	79	Foreign matter.
15	36	20	24	80	
16	42	25	24	91	Foreign matter.
17	42	24	24	90	Foreign matter.
18	42	25	24	91	Foreign matter.
19	38	24	24	86	Foreign matter.
20	35	24	20	79	Foreign matter.
21	35	20	22	77	Foreign matter.
22	35	20	25	80	Foreign matter.
23	40	20	25	85	Foreign matter.
24	32	20	25	77	Foreign matter.
25	35	20	25	80	Foreign matter.
26	45	25	25	95	Excellent.
27	42	24	24	90	Foreign matter.
28	45	25	25	95	Excellent.

The apparatus and methods employed in determining the quality of milk and cream are described as follows:

A wooden frame (Fig. 1) is placed on the top of the weigh can at the creamery, and is held in place by short wooden pegs on the under side. This frame is to support a tin funnel (Fig. 2) about fifteen inches in diameter at the top and seven inches at the bottom. On the top and inside of this funnel is placed a clean cloth strainer, through which the patron of the creamery pours his milk or cream (Fig. 3). Any coarse or undissolved dirt or foreign matter contained in the milk or cream will be caught and held by the strainer as the milk or cream passes from the patron's cans to the tank on the scales. A clean strainer cloth is used for each patron's milk or cream. By this method the milk or cream from each farm can be

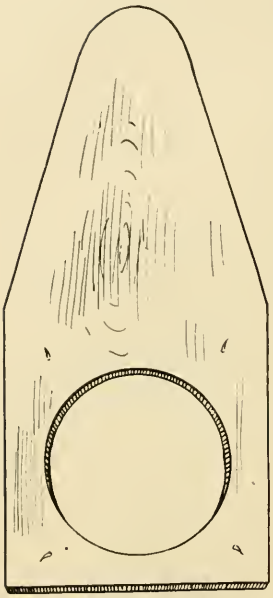

FIG. 1—Frame for holding funnel.

(Fig. 4) may be secured from any dairy supply house, with full directions for use. A standard for acidity should be established, which will be safe for

FIG. 2.—Funnel for strainer cloth.

easily, accurately and quickly examined for dirt or foreign matter.

The general condition of cans, covers or stoppers should be watched carefully and the use of dirty or rusty cans prohibited. Churned milk, frozen milk, thick or clotted cream are some of the conditions for which low scores may be given.

Too often milk and cream is delivered at a creamery in a condition altogether too sour for use in making the finest grade of butter. The acidity or sourness of milk or cream is an important item and should be carefully considered. To determine the approximate acidity of the various samples, Farrington's Alkaline Tablet Test is particularly convenient. The outfit

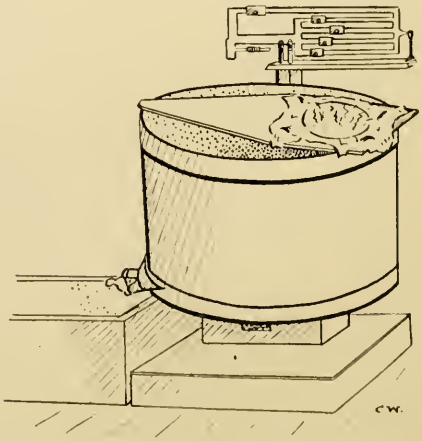

FIG. 3.—Weigh-can with strainer in position.

cream trade or for butter making, and yet not be unjust to the milk or cream producer. A standard of .20% acid will doubtless be high enough for any purpose. In some cases, however, a standard of .25% may be allowed.

The most important thing to be considered in scoring or grading milk or cream is its flavor. Upon the flavor of the milk or cream received at the creamery largely depends the quality of the finished butter. A few bad flavored lots of milk or cream may materially injure the quality of the day's product. By tasting a sample from each lot of milk or cream delivered, a good dairyman, after some practice, will be able to recognize the various flavors in different lots and give to each its proper rating or score. As the flavor or taste of milk and cream is easily changed when brought in contact with the various substances, the nature of the difficulty should, when possible, be pointed out and a remedy suggested.

FIG. 4.—Farrington's outfit for acidity test.

After considering the various points, a score card has been arranged by this department which has proven to be very useful in describing in detail and recording the condition of milk and cream. The score card is also a particularly valuable agency for presenting such detailed information to the creamery patron. In fact the score card's greatest usefulness is the service it renders in presenting to the milk and cream producers a comprehensive and accurate idea regarding the condition and quality of his product.

As will be noted, fifty points are given to flavor and taste, as the flavor of milk and cream, more than any other condition, determines the flavor or quality of the butter; twenty-five points are given to acidity, that is, the amount of acid or degree of sourness which has developed. Twenty-five points are also given to the general condition

of cans and contents. It therefore becomes possible to discourage, by means of the score cards, the presence of foreign matter and various things which in one way or another get inside the milk cans of careless patrons. It can also be used to discourage the use of milk containers of a questionable nature and condition.

SCORE CARD FOR . . . . . CREAMERY PATRONS.

Name of Patron . . . . . .

Flavor 50 points.	Acidity 25 points.	General condition of cans and contents 25 points.	Perfect score 100 points.
			Judge's score.

FAULTS ARE INDICATED BELOW.

Flavor.	Acidity.	General condition.	Remarks.
Bitter		Lumpy cream	
Silage		Rusty cans	
Manure	High	Dirty cans	
Weedy		Churned milk or cream	
Bad; unable to describe	Sour	Frozen milk or cream	
Vegetable		Foreign matter	

Date . . . . . 190 . Signature . . . . . *Judge.*

During the time this method has been in trial, the quality of milk and cream received has been slowly but constantly improving.

While some patrons always furnished a uniformly high grade product, others were surprised to know that their product was in any way bad, and quickly and cheerfully improved its quality. Others, of course, were slow to recognize anything wrong, and slow also to remedy the matter.

A creamery patron receiving a score card with the condition of his milk or cream plainly described knows better how to remedy existing difficulties. In adopting the system of scoring or grading milk and cream, it will be necessary also, if the plan is to be effective, to adopt a definite scale of

prices to be paid for butter fat in milk or cream of various grades.

Enough difference should be made in price so that there will be a strong incentive for each patron to furnish a high scoring product. The following arrangement of prices for butter fat in various grades of milk and cream has thus far

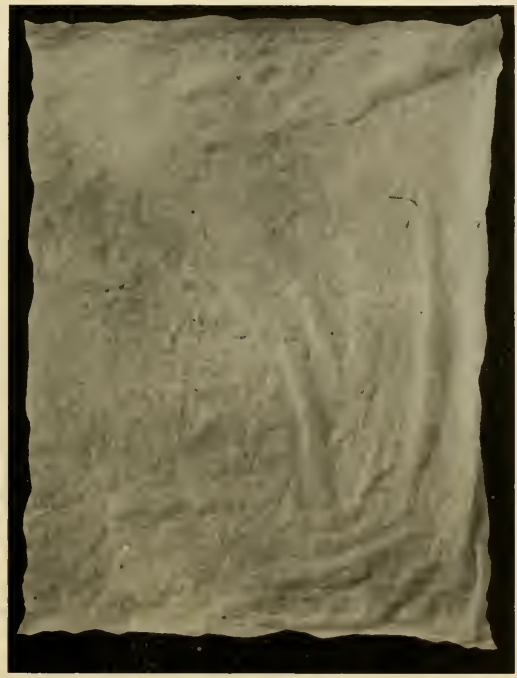

FIG. 5.—Clean strainer through which 200 pounds of clear milk was poured by Patron "A."

proved satisfactory: One cent extra per pound has been paid patrons for butterfat in milk or cream scoring 95 points or over. The usual price per pound has been paid patrons for butterfat in milk or cream scoring 90 and under 95 points.

One cent less than the usual price per pound has been

paid patrons for butterfat in milk or cream scoring 85 and under 90 points.

Two cents less than the usual price per pound has been paid patrons for butterfat in milk or cream scoring 80 and under 85 points.

Three cents less than the usual price per pound has been

FIG. 6.—Contents of cloth strainer through which 87 pounds of dirty milk was poured by patron "B."

paid patrons for butterfat in milk or cream scoring 75 and under 80 points.

Patrons furnishing milk or cream scoring under 75 points have at once been notified that they must improve the product or it would no longer be accepted at the creamery.

Each patron's milk or cream has been sampled and scored

at least twice each month; the average of these scores has been accepted as a basis for grading the price per pound for butterfat.

It is a well-known fact that many dairymen who produce clean milk or cream of excellent quality become disgusted when on delivering at the creamery they receive the same price per pound for butterfat as does the patron who furnishes an inferior product from some neighboring farm. Under such conditions there can be but little incentive for a producer to continue to be painstaking, or to make an attempt to further improve the quality of his product.

The system of scoring or grading milk or cream and grading the price paid creamery patrons for butterfat according to the quality or condition of the milk or cream from which that fat is obtained, would seem to be eminently just to the producer as well as to the creamery. While a part of the work of grading can be done by the use of tests which give results directly expressed by figures, other parts of the work are dependent solely upon the good judgment, ability and honesty of the person who has the work in charge.

In some instances it will be possible and desirable for creamery managers personally to score or grade the milk of their patrons. In other cases it will doubtless be possible and much more desirable for a group of creameries in the same locality to combine for the purpose of employing an expert who would do the scoring for each. This system would at least insure uniform methods and uniform standards among neighboring creameries. With fresher, cleaner, better flavored milk and cream delivered regularly to our creameries, the quality of New Hampshire creamery butter can be still further improved, and higher prices realized in the market and on the farm.

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